LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Chemical Products and Appliances at the Paris International Exhibition.

I SEE that attention has been called in these columns to the excellence of the German catalogue of instruments of precision distributed at the recent Exhibition. It will be of interest if, as a member of the jury representing Great Britain for Class 87, I may be permitted to add that the German catalogue explanatory of the collective chemical exhibits of that country is also a remarkable production, worthy of a permanent place on our library shelves. Copies of this work, printed and got up in a highly artistic way with German text, were distributed among the members of the jury by my friend, Geh. Rath. Dr. Otto N. Witt, the titular member representing Germany on our jury. A French edition was afterwards to be had on application to the custodian of the German exhibits. The work consists of over 200 pages, each embellished with a coloured floral design as a heading, and contains a general introduction, giving an account of the development of German chemical industry, the value of the production in this branch of manufacture for the year 1897 being estimated at 47,395,132*l.* (947,902.645 marks). The introductory part, which is from the pen of Dr. Witt, is followed by a special part containing the history, an account of the nature of the products manufactured, the equipment of the factory and scale of production, and a list of the exhibits of each of the ninety firms represented in the collective exhibit. Those who visited the Exhibition and made an examination of the chemical exhibits of the various countries will have formed their own conclusions as to their respective positions in the scale of chemical industry. At any rate, it is not the object of this letter to institute invidious comparisons—I merely wish to point out that it is not only in instruments of precision that the German catalogue reveals the industrial eminence of that country.

R. MELDOLA.

Electricities of Stripping and of Cleavage.

IN the ordinary process of giving a glazed surface to photographic paper prints by leaving them to dry face downwards upon clean glass, enough electricity is, I find, developed at the moment of separation between the dry glazed print and its glass support to produce a pretty bright illumination in the dark. "Solio" and other gelatino-chloride printing papers being very liable to adhere obstinately to a glass plate in this process, I have only constantly employed it with albumenised printing paper, and have then often noticed strong electrical attraction between the glass plate and the freshly separated paper. Not all glass plates, but apparently only very hard unhygroscopic ones, with a low percentage of soda in their composition, serve the purpose well; and even on these the print must not be freed from superfluous water by any pressure, but by swinging the plate until the water is sufficiently expelled to leave the glass and paper adhering firmly to each other. The paper can be then further freed from water by wiping it on the back, very lightly, with a soft cloth, and any intrusive air-bubbles seen through the glass can be driven out by stroking the back of the print very lightly with the finger. Left then to dry quite horizontally with the paper upwards, the latter will in hot, dry weather or in a very dry, warm room separate itself at last more or less completely from the glass; but in ordinarily damp atmosphere, and cold weather, remains, though sensibly quite dry, adhering to it. The slightest warmth of sunshine or of a fire or gas flame applied to the plate is then enough to make the paper crisp, and leave the glass. This it does with audible clicks as the adhesion breaks up here and there, showing that a state of pretty strong tension prevails in the thoroughly dry paper and the coat of albumen until these can break loose from their support.

The tension is apparently strongest in the albuminous coating of the paper, since the paper curls in towards that face when it is liberated; and if the process of separation is observed on the face of the print, through the glass, the still adhering white parts of the paper have a greenish, and the loosened parts the ordinary yellowish tinge of such papers, in very perceptible contrast with each other. When well dried spontaneously in a warm, dry place, if, also, the rough back of the dry paper is rubbed smooth before gently warming it to strip it off, there is strong enough electrical attraction between the glass and the released paper to keep the latter flat against the glass while the separation spreads, with clicks and snaps of freeing from the edges, until soon, the tension in the film prevailing, the glazed and loosened print bulges upwards in the middle and its ends curl inwards. In the drum-like shape which it then sometimes assumes I have seen it rolling about on the under side of the warm glass plate, supported there for some minutes by the mutual electrical attraction between the dry paper and its glass support.

After trying in vain, for some months past, to see any luminous signs of this strong electrification, by taking the warmed plate when separation was commencing, into an adjoining darker room to watch the operation's progress, to-night, at last, the experiment has perfectly succeeded. The conditions in which it did so were not exceptionally favourable ones in any particular respects that I could notice, but a quickly toned, fixed and washed albumen paper print had dried slowly and thoroughly in a dry, warm place without loosening itself from the glass surface. The paper was not smoothed on the back before holding it pretty close to the dull hot coals of a low fire, which had scarcely time to more than slightly warm it, when clicking sounds announced that splitting from the glass surface had commenced.[1] A glance through the glass face showed that loosening from the glass at one end of the print had just begun, and the plate was immediately taken, for the paper to finish freeing itself, into perfect darkness in another room. Though but very slightly warmed, a little waving of the plate, with its transparent glass side upwards, up and down (which assists the parting by rapid drying and changes of temperature in the paper), presently advanced the cleavage a little step further, and this was marked by an audible snap, and at the same time by a light-flash at the released end of the print, bright enough to have been seen easily by sufficiently watchful eyes, from any part of the moderately large room. The same bright glow followed the line of yielding of the print, while it was then quickly seized by its loose end and stripped from the under side of the glass plate by hand, as a yellow or orange-coloured stripe of gauzy light, about half an inch wide, as bright as the first flicker of whiter gauzy light.

Considering that the tough coating of dry albumen seems to be stretched on its glass support with considerable strain and force of tension, which is slackened and released immediately behind its advancing line of severance from the rigid glass, perhaps the electric excitation may be due to friction of small rubbing surfaces of the loosened coat of albumen against the glass; and in that case the example may be one of electrification by a mechanical, rather than by a molecular form of cleavage like that observed in crystals, of one surface from another. In Becquerel's well-known experiment of the evolution of electricity and light when a thin lamina of mica is split into two thinner leaves, no definable forces of released tension, leading to electrification by friction of dissimilar portions of the crystal, can be resorted to as probable effective working sources in the mica, or in other crystals, of the electricities developed by their cleavage. But while no evident condition seems, in fact, to predetermine which of the two halves of a split leaf of mica should be found to receive a positive and which a negative charge from the electrifying forces which the cleavage exercises, the common experience that glass rubbed with silk is positively, and the silk negatively, electrified in a determinate and certain way could easily afford a test, and might furnish some assurance of the sufficiency of the above view's account of the origin in mechanical friction of the glass's and paper's opposite electrifications, if the two bodies, stripped asunder, are found to be endued with electrical charges of invariable kinds agreeing with those which glass and dried white of egg acquire when they are rubbed together. But I have not yet had an opportunity of putting the question to this test by the simple use of an electroscope, although the experiment could be easily performed with that appropriate equipment as the persistency of the charges on the glass and on the paper is plentifully long enough to allow of their complete investigation.

---

[1] These sounds are chiefly due to tough adhesions common at ragged points along the paper edges, and overcome from time to time by the spreading separation and increasing tension. Across the open print surface the separation spreads silently and smoothly, except across occasional spots of softened albumen with unduly tough adhesion, which may also there sometimes occasion snapping sounds in parting.

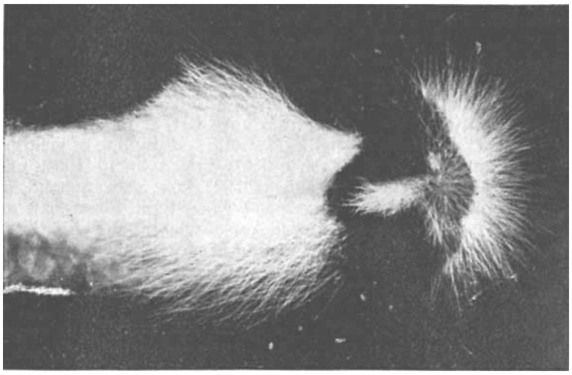
© 1900 Nature Publishing Group

The momentary gleams of the electric light-play can be very easily observed by holding an albumen paper print thoroughly well self-dried on glass, paper side downwards, in a perfectly dark room over a hot room-stove to produce the paper's separation, and by stripping the print off downwards as soon as some edge of it has grown loose enough—probably with some signs of light—to allow it to be taken in the fingers. I have by this means now seen those brush and glow lights' flitting beams a second time, and there seems to be no difficulty of producing them in varied form and brightness by this method of proceeding. A. S. HERSCHEL.

Observatory House, Slough, December 10.

Photography of the Static Discharge.

The accompanying photograph of the spark of a large static machine may possibly be of some interest to the readers of NATURE. The machine is a large Holtz, used in the electrical department of St. Bartholomew's Hospital. It consists of eight glass plates of twenty-nine inches in diameter, inclosed in a glass case. It is driven by a motor which is worked by the 100 volt alternating main which supplies the electrical department with its alternating current. The initial charge is obtained from a small Voss machine which is inclosed in the case of the Holtz. The photograph was obtained in the following manner. The machine was started and the brass knobs of the conductors adjusted to give a spark of about seven inches in length. The knobs were now tested in the usual way (by presenting a metallic point to the conductors) with reference to the sign of their charge. A gelatine dry plate was then taken, inclosed firstly in an orange and then in a black envelope. The plate was placed between the knobs of the conductors in a line parallel with them and the sparks allowed to play over the envelope for a period of one second of time. The plate was then taken to the dark-room, developed and fixed in the ordinary way. The accompanying illustration shows the curious results obtained. A distinct break can be seen in the continuity of the sparks between the positive and negative poles. Round the positive pole the sparks are rushing off in a dense mass with a direction from the negative pole of the machine. At the line of separation of this dense mass of sparks is seen a depression as if the mass had been eroded by the negative charge, reminding one very forcibly of what happens to the positive carbon of the arc light. At the negative pole the sparks are much less dense and more fan-shaped, and radiate in the reverse direction to the positive sparks with the exception of a cone of sparks, which are much smaller, which approach the depression in the positive mass. This prolongation of small sparks towards the positive pole is seen in each of the photographs obtained. The results of the experiment are curious. I am unable to explain them, but think they are perhaps worthy of record.



St. Bartholomew's Hospital. HUGH WALSHAM.

Malaria and Mosquitoes.

As I was reading the very interesting article by Dr. Fielding-Ould on the "Malaria Campaign," which appeared in NATURE of November 8, I was struck by the fact that the use of the mosquito-netting he suggests as an efficacious preventive against malaria fever was already arrived at several years ago through nothing but experience in one of the malaria districts in Syria. The following is a translation of a letter published in vol. viii. (April 1884) of the *Muktataf*, an Arabic literary and scientific review, edited in Cairo, Egypt, by Drs. Sarrûf and Nimr :—

"To the Editors of *Al-Muktataf*.

"GENTLEMEN,—I have already had the chance of observing the spread of the malaria fever in Rashiya, both in the autumns of 1878 and 1883, and I noticed that one of the principal agents in effecting its spread was the mosquito. I have also noticed that all those who, at the time of the epidemic, took precautions against the mosquito bites escaped the fever, a fact well known in this part of the country. I therefore conclude that mosquito nets which completely cover the bed and prevent the entrance of mosquitoes are the best fever preventives in countries abounding in malaria marshes.

ABDELLA JABBOUR,

Rashiya.

Trusting the above will find a place in your esteemed paper,

N. Y. SARRÛF.

Cairo, December 7.

Can Spectroscopic Analysis Furnish us with Precise Information as to the Petrography of the Moon?

THEORETICALLY I think we may reply in the affirmative, but whether our means of observation are, as yet, delicate enough to give give us trustworthy results I leave to the investigation of your readers.

As the question is of considerable interest, pardon me if I enter somewhat into detail.

(1) If we had two smooth, plane, parallel mirrors, perfectly elastic, and a gas jet midway between them, we might first light the gas and then extinguish it without destroying the illumination, for, if the mirrors were perfectly elastic, the waves of light would oscillate between the two for ever with undiminished intensity. We know that this is not the case, therefore no known substance is perfectly elastic.

(2) If direct solar light fall upon a large mass of sandstone, part of it penetrates the mass as heat, and part is reflected, with a diminished velocity, so that we might expect, *a priori*, an apparent displacement of the Fraunhofer lines, as compared with the spectrum of direct sunlight.

(3) Similar results might be looked for with regard to limestone, basalt, &c., but not identical, unless we make the very improbable supposition that all solids are equally elastic.

(4) Hence it should be possible to construct a table of relative photo-elasticities so that if the substance were given its elasticity might be found by inspection, and *vice versâ*.

(5) Next, analysing the sunlight reflected from various regions of the moon, and referring to our table, we might hope for answers to the questions

(α) Are Tycho, Copernicus and the Appenines basaltic?

(β) Is the Mare Tranquilitatis the dried-up limestone bed of a saltwater ocean, or the dried-up sandstone bed of a freshwater inland sea?

I admit, at once, that the observations suggested are of extreme delicacy, but I cannot consider them insurmountable in an age which has witnessed the proof of the regression and subsequent approach of Sirius to the solar system by this very method. W. J. KNIGHT.

Cork.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

AT the International Conference which met in London last June to discuss this subject, it was thought that the time had arrived when the great work of publishing a complete catalogue of all the scientific literature of the world might be undertaken with every prospect of success.

A Provisional International Committee was, therefore, appointed at the Conference to carry out the preliminary work, and this Committee reported the results of its labours to an International Council which met last week in the rooms of the Royal Society.

© 1900 Nature Publishing Group